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### NOTICE OF ALLOWANCE AND FEE(S) DUE

95671 7590 Synopsys/Fenwick Silicon Valley Center 801 California Street Mountain View, CA 94041 10/04/2011

EXAMINER

SOWARD, IDA M

ART UNIT PAPER NUMBER

2822

DATE MAILED: 10/04/2011

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,037	09/12/2003	John D. Hyde	22524-17802	6704

TITLE OF INVENTION: APPARATUS FOR TRIMMING HIGH-RESOLUTION DIGITAL-TO-ANALOG CONVERTER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1740	\$0	\$0	\$1740	01/04/2012

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN <u>THREE MONTHS</u> FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. <u>THIS STATUTORY PERIOD CANNOT BE EXTENDED.</u> SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

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CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)  95671  7590  10/04/2011  Synopsys/Fenwick Silicon Valley Center 801 California Street Mountain View, CA 94041			Fe pa ha I h Sta ad	e(s) Transmittal. Thi pers. Each additiona we its own certificate  Cer ereby certify that th ttes Postal Service w dressed to the Mail	s certif l paper of mai <b>tificate</b> is Fee(s tith suf	icate cannot be used for , such as an assignmen ling or transmission. of Mailing or Transn	deposited with the United class mail in an envelope above, or being facsimile
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APPLICATION NO.	FILING DATE		FIRST NAMED INVENTO	R	ATTO:	RNEY DOCKET NO.	CONFIRMATION NO.
10/661,037	09/12/2003		John D. Hyde			22524-17802	6704
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FR 1.363).  ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.  ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PLEASE NOTE: Unless an assignee is identified below, no assignee			(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.  THE PATENT (print or type)  e data will appear on the patent. If an assignee is identified below, the document has been filed for a substitute for filing an assignment.				
(A) NAME OF ASSIG	GNEE iate assignee category or	categories (will not be pr	(B) RESIDENCE: (CIT	Y and STATE OR C	orporati	on or other private grou	up entity Government
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10/661,037	09/12/2003	John D. Hyde	22524-17802	6704	
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Synopsys/Fenwic		SOWARD, IDA M			
Silicon Valley Center					
801 California Stre			ART UNIT	PAPER NUMBER	
Mountain View, Ca	A 94041		2822		

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 979 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 979 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

### **Privacy Act Statement**

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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- 2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
- 3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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- 6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
- 7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
- 8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
- 9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

	Application No.	Applicant(s)				
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Notice of Allowability	10/661,037	HYDE ET AL.  Art Unit				
Notice of Anomabinity	Examiner	Art Offic				
	IDA M. SOWARD	2822				
The MAILING DATE of this communication appears on the cover sheet with the correspondence address All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.						
1. $\blacksquare$ This communication is responsive to <u>the Applicants' amendation</u>	<u>ment filed July 28, 2011</u> .					
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on; the restriction requirement and election have been incorporated into this action.						
3. X The allowed claim(s) is/are 36,39,40,44-48 and 51-63.						
4. ☐ Acknowledgment is made of a claim for foreign priority under a) ☐ All b) ☐ Some* c) ☐ None of the:	• ,,,,,					
<ol> <li>Certified copies of the priority documents have</li> <li>Certified copies of the priority documents have</li> </ol>						
3. ☐ Copies of the certified copies of the priority documents have	• • • • • • • • • • • • • • • • • • • •					
International Bureau (PCT Rule 17.2(a)).	samente nave seem received in time i	national otago apphoation from the				
* Certified copies not received:						
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.						
5. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.						
6. CORRECTED DRAWINGS ( as "replacement sheets") must	t be submitted.					
(a) $\square$ including changes required by the Notice of Draftspers	on's Patent Drawing Review ( PTO-	948) attached				
1)  hereto or 2)  to Paper No./Mail Date						
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date						
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).						
7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.						
Attachment(s)						
1. Notice of References Cited (PTO-892)	5. Notice of Informal P	atent Application				
2. Notice of Draftperson's Patent Drawing Review (PTO-948)	6. ☐ Interview Summary Paper No./Mail Dat					
3. Information Disclosure Statements (PTO/SB/08),	7. ☐ Examiner's Amendn					
Paper No./Mail Date  4.  Examiner's Comment Regarding Requirement for Deposit	8. 🛛 Examiner's Stateme	ent of Reasons for Allowance				
of Biological Material	9.					
/IDA M SOWARD/						
Primary Examiner, Art Unit 2822						

### **DETAILED ACTION**

This Office Action is in response to the Applicants' amendment filed July 28, 2011.

# Specification

The objection to the title of the invention has been withdrawn due to the amendment filed.

# Claim Objections

The objection to claims 46 and 48 has been withdrawn due to the amendment filed.

# Claim Rejections - 35 USC § 112

The objection to claims 36, 44, 45, 46, 47 and 48 under 35 U.S.C. 112, second paragraph, has been withdrawn due to the amendment filed.

## Allowable Subject Matter

Claims 36, 39-40, 44-48 and 51-63 are allowed.

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The following is an examiner's statement of reasons for allowance: The prior art of record does not disclose, make obvious, or otherwise suggest the structure of the applicant's together with the other limitations of the independent claims, such as:

In claim 36, "a second p+ doped region disposed in said first n- well forming a first drain, a number of electrons injected into the floating gate increased when a voltage difference between the first source and the first drain is increased; and a channel disposed in said first n- well between said source and said drain; a first layer of gate oxide above said channel and said first n- well; and a first polysilicon floating gate disposed above said layer of gate oxide; and a shorted transistor for removing electrons from the floating gate, the shorted transistor comprising: a p-doped substrate including a second n-well, a second drain within the second n-well, and a second source within the second n-well, wherein the second drain comprises a third p+ doped region within the second n-well, and the second source comprises a fourth p+ doped region; a second layer of gate oxide above said first n- well; a second polysilicon floating gate above said second layer of gate oxide, the second polysilicon floating gate connected to the first polysilicon floating gate; and a conductor connecting the second drain and the second source, wherein a number of electrons removed from the second polysilicon floating gate is increased when voltage at the second drain or the second source is increased, wherein the conductor comprises a conductive laver which forms a bridge over said second polysilicon floating gate";

In claim 44, "a second p+ doped region disposed in said first n- well forming a first drain, a number of electrons injected into the floating gate increased responsive to

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increase in when a voltage difference between the first source and the first drain is increased; and a channel disposed in said first n- well between said source and said drain; a first layer of gate oxide above said channel and said first n- well; and a first polysilicon floating gate disposed above said layer of gate oxide; and a shorted transistor for removing electrons from the floating gate, the shorted transistor comprising: a p- doped substrate including a second n-well, a second drain within the second n-well, and a second source within the second n-well, wherein the second drain comprises a third p+ doped region within the second n-well, and the second source comprises a fourth p+ doped region; a second layer of gate oxide above said first nwell; a second polysilicon floating gate above said second layer of gate oxide, the second polysilicon floating gate connected to the first polysilicon floating gate; a conductor connecting the second drain and the second source, wherein a number of electrons removed from the second polysilicon floating gate is increased when voltage at the second drain or the second source is increased, wherein the conductor comprises a conductive layer which forma s bridge over said second polysilicon floating gate; and a well contact terminal electrically coupled to said second n- well, wherein said synapse transistor is configured to operate as a current source without gate input using a single polysilicon gate layer";

In claim 45, "a second p+ doped region disposed in said first n- well forming a first drain, a number of electrons injected into the floating gate increased when a voltage difference between the first source and the first drain is increased; and a channel disposed in said first n- well between said source and said drain; a first layer of gate

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oxide above said channel and said first n- well; and a first polysilicon floating gate disposed above said layer of gate oxide; and a shorted transistor for removing electrons from the floating gate, the shorted transistor comprising: a p- doped substrate including a second n-well, a second drain within the second n-well, and a second source within the second n-well, wherein the second drain comprises a third p+ doped region within the second n-well, and the second source comprises a fourth p+ doped region; a second layer of gate oxide above said first n- well; a second polysilicon floating gate above said second layer of gate oxide, the second polysilicon floating gate connected to the first polysilicon floating gate; and a conductor connecting the second drain and the second source, wherein a number of electrons removed from the second polysilicon floating gate is increased when voltage at the second drain or the second source is increased";

In claim 46, "a second p+ doped region disposed in said first n- well forming a first drain, a number of electrons injected into the floating gate increased when a voltage difference between the first source and the first drain is increased; and a channel disposed in said first n- well between said source and said drain; a first layer of gate oxide above said channel and said first n- well; and a first polysilicon floating gate disposed above said layer of gate oxide; and a shorted transistor for removing electrons from the floating gate, the shorted transistor comprising: a p- doped substrate including a second n-well, a second drain within the second n-well, and a second source within the second n-well, wherein the second drain comprises a third p+ doped region within the second n-well, and the second source comprises a fourth p+ doped region; a

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second layer of gate oxide above said first n- well; a second polysilicon floating gate above said second layer of gate oxide, the second polysilicon floating gate connected to the first polysilicon floating gate; and a conductor connecting the second drain and the second source, a number of electrons removed from the second polysilicon floating gate is increased when voltage at the second drain or the second source is increased";

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In claim 47, "a second p+ doped region disposed in said first n- well forming a first drain, a number of electrons injected into the floating gate increased when a voltage difference between the first source and the first drain is increased; and a channel disposed in said first n- well between said source and said drain; a first layer of gate oxide above said channel and said first n- well; and a first polysilicon floating gate disposed above said layer of gate oxide; and a shorted transistor for removing electrons from the floating gate, the shorted transistor comprising: a p- doped substrate including a second n-well, a second drain within the second n-well, and a second source within the second n-well, wherein the second drain comprises a third p+ doped region within the second n-well, and the second source comprises a fourth p+ doped region; a second layer of gate oxide above said first n- well; a second polysilicon floating gate above said second layer of gate oxide, the second polysilicon floating gate connected to the first polysilicon floating gate; and a conductor connecting the second drain and the second source, wherein a number of electrons removed from the second polysilicon floating gate is increased when voltage at the second drain or the second source is increased"; and

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In claim 48, "a second p+ doped region disposed in said first n- well forming a first drain, a number of electrons injected into the floating gate is increased when a voltage difference between the first source and the first drain is increased; and a channel disposed in said first n- well between said source and said drain; a first layer of gate oxide above said channel and said first n- well; and a first polysilicon floating gate disposed above said layer of gate oxide; and a shorted transistor for removing electrons from the floating gate, the shorted transistor comprising: a p- doped substrate including a second n-well, a second drain within the second n-well, and a second source within the second n-well, wherein the second drain comprises a third p+ doped region within the second n-well, and the second source comprises a fourth p+ doped region; a second layer of gate oxide above said first n- well; a second polysilicon floating gate above said second layer of gate oxide, the second polysilicon floating gate connected to the first polysilicon floating gate; and a conductor connecting the second drain and the second source, wherein a number of electrons removed from the second polysilicon floating gate is increased when voltage at the second drain or the second source is increased".

The dependent claims being further limiting and definite are also allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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#### Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to transistor devices:

Awaka et al. (US 6,307,233 B1) Chishiki (5,714,796)

Fujita et al. (5,336,915) Jeon (5,373,476)

Kimura et al. (5,323,043) Kumagai (US 6,329,693 B1)

Miyazaki (5,537,075) Ouchi et al. (6,097,067).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ida M. Soward whose telephone number is 571-272-1845. The examiner can normally be reached on Monday - Thursday 6:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra V. Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IMS
September 28, 2011
/Ida M Soward/
Primary Examiner, Art Unit 2822